

Electric Power Engineering on a New Level

SOV/105-58-10-21/28

ASSOCIATION: 4) Translektroproyekt  
5) and 6) Kuybyshevskoye otdeleniye Elektroproyekta (Kuybyshev  
Branch of the Elektroproyekt )

Card 3/3

SHAPIRO, I.M.

Drainage of the cerebrospinal fluid in perineural sheaths of the  
olfactory nerves. Biul.eksp.biol. i med. 38 no.12:57-62 D '54.  
(MLRA 8:3)

1. Iz Balabanovskoy bol'nitsy Kaluzhskoy oblasti (glavnyy vrach  
A.D.Shakhovtsev)

(NERVES, OLFACTORY,

drain. of CSF in perineural sheaths)

(CEREBROSPINAL FLUID,

drain in olfactory perineural sheaths)

SHAPIRO, I.M.

Heart wound. Zdrav. Bel. 5 no.5:56 My '59.

(MIRA 12:8)

1. Iz Buda-Koshelevskoy raybol'nitsy Gomel'skoy oblasti.  
(HEART--WOUNDS AND INJURIES)

SHAPIRO, I.M. (Altayskiy kray)

Practical tasks. Mat. v shkole no.3:42-44 My-Je '63.  
(MIRA 16:7)

(Mathematics—Study and teaching)

GRAYEVSKIY, E.Ya.; SHAPIRO, I.M.

Review of V IU. Urbakh's book "Mathematical statistics for  
biologists and physicians". Radiobiologiya 3 no.4:628-629  
'63. (MIRA 17:2)

SHAPIRO, I.M., student (Moscow); ABRIKOSOV, A.I., akademik, zaveduyushchiy.

Hypophyseal cell tumor. Arkh.pat. 15 no.4:74-78 J1-Ag '53. (MIRA 6:11)

1. Kafedra patologicheskoy anatomii I Moskovskogo ordena Lenina meditsinskogo  
instituta. (Pituitary body--Tumors)

SHAPIRO, I.M.

M.N.Nikiforov's microbiological research; on the history of  
microbiology in Russia. Zhur.mikrobiol.epid.i immun. no.1:  
66-68 Ja '54. (MLRA 7:2)

1. Iz kafedry patologicheskoy anatomii (zaveduyushchiy akademik  
A.I.Abrikosov) i Moskovskogo ordena Lenina meditsinskogo instituta.  
(Nikiforov, Mikhail Nikiforovich, 1858-1915)

BYKOVA, N.A.; ZHIBRO, T.F.; SEROV, V.V.; SHAPIRO, I.M.

Method of angiorosentgenography in pathological anatomy. Arkh.  
pat. 17 no.3:71-72 J1-S '55. (MLRA 8:12)

1. Iz kafedry patologicheskoy anatomii (zav.-chlen-korrespondent  
AMN SSSR prof. A.P.Strukov) I Moskovskogo ordena Lenina  
meditsinskogo instituta.

(ANGIOGRAPHY,  
in pathol.)

(PATHOLOGY,  
angiography in)



SHAPIRO, I. M.

Shapiro, I. M.

"Material on the morphology and pathogenesis of infarcts of the kidneys (experimental investigation)." First Moscow Order of Lenin Medical Inst imeni I. M. Sechenov. Moscow, 1956. (Dissertation for the Degree of Candidate in Medical Science)

So: Knishnava letopis', No. 25, 1956

SHAPIRO, I.M.; LOSEV, N.I.; PARTSKHALADZE, N.N.

Experimental renal infarcts. Report no.1: Investigation of renal blood supply in infarcts with the aid of radiophosphorus. Biul.eksp.biol. i med. 42 no.8:22-26 Ag '56. (MLRA 9:11)

1. Iz kafedry patologicheskoy anatomii (zav. - chlen-korrespondent AMN SSSR prof. A.I.Strukov) i kafedry patologicheskoy fiziologii (zav. prof. S.M.Pavloenko) I Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M.Sechenova. Predstavlena deystvitel'nyy chlenom AMN SSSR A.L.Myasnikovym.

(KIDNEYS, infarction,

blood supply in infarcted kidneys, radiophosphorus tests)

(PHOSPHORUS, radioactive,

determ. of blood supply in infarcted kidney in animals (Rus))

SHAPIRO, I.M. (Moskva)

Venous infarcts of the kidneys [with summary in English]. Arkh.  
pat. 19 no.12:46-53 '57. (MIRA 11:2)

1. Iz kafedry patologicheskoy anatomii (zav. - chlen-korrespondent  
AMN SSSR prof. A.I.Strukov) I Moskovskogo ordena Lenina meditsinskogo  
instituta imeni I.M.Sechenova.

(KIDNEYS, blood supply  
exper. venous infarct in rats)

(INFARCTION, exper.  
venous of kidneys in rats)

SHAPIRO I.M.  
USSR/Human and Animal Physiology (Normal and Pathological)  
Blood Circulation. Vessels.

T

Abs Jour : Ref Zhur Biol., No 6, 1959, 26621

Author : Shapiro, I.M.

Inst : -

Title : Experimental Infarct of Kidneys, Report II. Arterial  
Infarction

Orig Pub : Dzul. eksperim. biol. i med., 1957, 44, No 8, 111-113

Abstract : Infarction of left kidney was induced in rats by ligation of the "zadnelokhannaya" renal retropelvic artery. In 43 experiments the kidney innervation was preserved, in 32 experiments 7-12 days prior to ligation of the vessel denervation of the left kidney was performed, in 22 experiments the fibrous capsule of the kidney was removed simultaneously or 8-12 days prior to ligation of the artery. The animals were killed 40 minutes, 1½, 3, 6, 12, 24 hours and 3, 7, 14, 21 and 30 days after ligation of

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SHAPIRO, I.M.; SMIRNOVA, I.B.

Count of cells with anaphasic bridges and acentric phragments as a basis for biological estimation of radiation dose in mammals. Dokl. AN SSSR 138 no.4:945-947 Je 1961. (MIRA 14:5)

1. Institut morfologii zhivotnykh imeni A.N.Severtsova AN SSSR.  
Predstavleno akademikom Yu.A. Orlovym.  
(RADIATION--DOSAGE) --(CHROMOSOMES)

30728

S/020/61/141/003/017/021  
B115/B110

27.12.20

AUTHOR: Shapiro, I. M.

TITLE: Conservation of chromosomal damage in resting liver cells of rats after X-ray treatment

PERIODICAL: Akademiya nauk SSSR. Doklady. v. 141, no. 3, 1961, 734 - 736

TEXT: The damage of one chromosome in the liver cell of white rats, induced by a radiation dose of 92 r by means of an РУП-1 (RUP-1) apparatus at a rate of 23 r/min, was studied. By means of the results obtained, conclusions of previous tests were confirmed and precisely formulated: Chromosomal damages caused in the liver cells outlast the interkinesis preceding the first mitosis after irradiation (cf. I. M. Shapiro, DAN, 124, No. 3, 681 (1959); Intern. J. Rad. Biol., 3, 293 (1961)). On the other hand, the activity of the mitotic cells suppressed by irradiation is restored during interkinesis. In hepatectomy the central and left lateral lobes of the liver of the animals were removed. 30 hr (series I - III) or 24 hr after this operation (series IV), the animals were decapitated. Pieces of the remaining lobe of the liver were fixed, colored, and examined.

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S/020/61/141/003/017/021

B115/B110

Conservation of chromosomal damage in ...

The percentage of cells with chromosomal aberrations was taken as an indication of the damage of the liver cells of the animal. Test series: (I) hepatectomy 30 days after irradiation; (II) hepatectomy 24 hr after irradiation; (III) irradiation 10 - 20 min after hepatectomy; (IV) the same as (III), however, irradiation after 6 hr. It was assumed that at the moment of irradiation, the chromosomes were not reduplicated. Results: The radiation damage of chromosomes is conserved in resting liver cells after irradiation. The possibility of spontaneous restitution of chromosomal damage (cf. K. G. Lüning, Hereditas, 44, 1, 161 (1958) is refuted by the results. If, however, this restitution should really take place, this could only happen during the first 24 hr after irradiation; for the number of damaged chromosomes remains constant after this period. The conservation of radiation damage of chromosomes is important to the understanding of aftereffects of radiation and radiation-induced disturbances of regeneration processes. Cells with damage causing the formation of acentric fragments are not viable (Refs. 8 and 9, see below). These cells are destroyed either during mitosis due to radical structural changes of chromosomes (bridges) or during the first to third generations. According to some researchers, non-lethal damage of chromosomes might lead to the

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00123

S/020/61/141/003/017/021

B115/B110

Conservation of chromosomal damage in ...

formation of malignant tumors. There are 1 table and 11 references: 5 Soviet and 6 non-Soviet references. The three most recent references to English-language publications read as follows: Ref. 4: M. D. Albert, N. Bucher, Cancer Res., 20, No. 10, 1514 (1960); Ref. 8: A. Howard. Pathol. et Biol., 2, 7 - 8, 835 (1961); Ref. 9: D. E. Lee, Action of Radiation on Living Cells, Cambridge, 1956.

ASSOCIATION: Institut morfologii zhivotnykh im. A. N. Severtsova Akademii nauk SSSR (Institute of Animal Morphology imeni A. N. Severtsov of the Academy of Sciences USSR)

PRESENTED: June 30, 1961 by I. I. Shmal'gauzen, Academician

SUBMITTED: June 23, 1961

Card 3/3



BARAKINA, N.F.; SHAPIRO, I.M.; YANUSHEVSKAYA, M.I.

Intravital biological evaluation of irradiation dosage in mammals  
by determining the ratio of marrow cells containing chromosomal  
aberrations. Dokl. AN SSSR 149 no.5:1187-1189 Ap '63.  
(MIRA 16:5)

1. Institut morfologii zhivotnykh im. A.N.Severtsova AN SSSR.  
Predstavleno akademikom I.I.Shmal'gauzenom.  
(Radiation--Dosage) (Chromosomes)

ACCESSION NR: AP4042216

S/0020/64/157/002/0460/0463

AUTHOR: Paly\*ga, G. F., Yarmonenko, S. P., Shapiro, I. M.

TITLE: The repair of chromosome injury in resting liver cells of rats upon chronic gamma irradiation

SOURCE: AN SSSR. Doklady\*, v. 157, no. 2, 1964, 460-463

TOPIC TAGS: chromosome, chromosome injury, radiation injury, resting liver cell, chromosome injury repair, rat liver, single radiation exposure, prolonged radiation exposure, low dose radiation exposure, high dose radiation exposure, cumulative radiation effect, mitotic index

ABSTRACT: Earlier studies have shown that radiation injuries of chromosomes caused by a single exposure are retained in resting liver cells of adult rats and mice for many months. The present study attempted to determine the possible relation between the time during which a certain radiation dose is absorbed and the repair process of injured chromosomes. Tests were conducted in 2 lots of white rats; one group received a single 150 rad dose at 26 rad/min., the other the same dose at  $7.10^{-3}$  to  $5.8.10^{-4}$  rad/min. The latter were irradiated around the clock except

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ACCESSION NR: AP4042216

when cells were removed for examination. The mitotic index was determined in controls and the animals of the first lot. Following stimulation of liver cell division by removing part of the liver the animals were sacrificed. The mitotic index, number of damaged chromosomes and extent of damage were determined. Results are figured. The mitotic index of the second lot did not differ much from controls. The lower the dose, the lower was the percentage of cells with chromosome aberrations. This effect increased with time; after 6 months hardly any difference from controls was observed. This was apparently due to repair of chromosome injuries in the resting cells (60% with one injured chromosome, 40% with 2 or more). On the basis of observations it was calculated that with time the number of repaired cells tends to reach 100%. This finding is supported by the absence of cells with 2 or more acentric fragments and bridges upon longer exposure. The concepts on the cumulative effects of exposure may thus have to be re-examined. Such summary effects may weaken or fail to appear with very low doses. It appears that the determinant factor in these tests was the low dose rather than prolonged exposure. It may thus be possible to regulate chronic irradiation without recourse to observations from a single irradiation. Orig. art. has: 2 tables and 2 figures.

ASSOCIATION: Institut gigeny\* truda i profzabolevaniy Akademii meditsinskikh

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ACCESSION NR: AP4042216

nauk SSSR (Institute of Work and Professional Hygiene, Acad. of Medical Sciences  
SSSR); Institut morfologii zhiivotny\*kh im. A. N. Severtsova Akademii nauk SSSR  
(Institute of Animal Morphology, Acad. Sciences SSSR)

SUBMITTED: 28Dec63

ENCL: 00

SUB CODE: LS

NO REF SOV: 006

OTHER: 007

Card 3/3

L 54839-65

ACCESSION NR: AP5017924

UR/0020/64/159/005/1158/1160

AUTHOR: Faleyeva, Z. N.; Shapiro, I. M.

TITLE: Lethal action of disturbances in the chromosome balance on tumor cells

SOURCE: AN SSSR. Doklady, v. 159, no. 5, 1964, 1158-1160

TOPIC TAGS: animal genetics, experiment animal, x ray irradiation, radiation biologic effect, cytology, radiotherapy, neoplasm

ABSTRACT: Mice were given intraperitoneal injections of various amounts of cells of Ehrlich's ascitic carcinoma in the  $3 \times 10^5$  -  $1 \times 10^6$  range after the cells had been irradiated with a dose of x-rays large enough to produce chromosome aberrations in all but 1,000 cells. The rate of survival of mice 6 months, after the injection was the same in every instance - i.e., only cells without chromosome aberrations were viable and effective in producing the tumor. After mice had been injected with various amounts of Ehrlich's ascitic carcinoma cells taken from mice that had been infected with this tumor and then irradiated with x-rays in a dose of 2,020 r, the development

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ACCESSION NR: AP5017924

of the tumor within the next 15 days was delayed as compared with that in control mice injected with an equivalent number of intact carcinoma cells without chromosome aberrations. The delay in the development of the tumors was due to an inhibition in the division of intact cells and possibly also to an effect of cells killed by radiation on the intact cells. The results obtained confirmed the correctness of the hypothesis in regard to the lethal effect on tumor cells of disturbances in the chromosome balance and indicated that the percentage of tumor cells with chromosome aberrations may serve as a convenient criterion of effectiveness in the development of methods for the radiation therapy of tumors.

Orig. art. has: 1 graph, 1 table.

ASSOCIATION: Institut morfologii zhivotnykh im. A. N. Severtsova Akademii nauk SSSR (Institute of Animal Morphology, Academy of Sciences SSSR)

SUBMITTED: 06Apr64

NR REF SOV: 001  
Cardl 2/2

ENCL: 00

OTHER: 010

SUB CODE: 1S, NP

JPRS

SHAPIRO, Ivan Mikhaylovich

Academic Degree of Doctor of Medical Sciences, based on his defense, 18 May 1954, in the Council of the Medical and Biological Department of the Acad Med Sci USSR, of his dissertation entitled: "The Nervous System in the Grafting Process and Restoring the Functions of the Thyroid and Adrenal Glands during Their Self-Transplantation."

Academic degree and/or title: Doctor of Sciences

SO: Decisions of VAK, List no. 1, 7 Jan 56, Byulleten' MVO SSSR, Uncl.  
JPRS/NY-548

SHAPIRO, I. M.

"The Role of the Nervous System in Auto-transplantation of Thyroid and Adrenal Glands" p. 257

Problema Reaktivnosti v Patologii, Medgiz, Moscow, 1954, 344pp



SHAPIRO, I.M.; NEVSTRUYEVA, V.S.

Modification of blood sugar content in rabbits following bilateral adrenalectomy and subsequent autotransplantation. Biul.eksp.biol. i med. 40 no.9:30-33 S '55. (MLRA 8:12)

1. Iz Instituta normal'noy i patologicheskoy fiziologii (dir.-deystvitel'nyy chlen AMN SSSR V.N.Chernigovskiy) ~~AMN~~ SSSR Moskva.

(BLOOD SUGAR,

eff. of adrenal autotranspl. in rabbits)

(ADRENAL GLANDS, transplantation,

autotranspl.,bilateral, eff. on blood sugar in rabbits)

(TRANSPLANTATION,

adrenal bilateral autotranspl.,eff. on blood sugar in rabbits)

VIKHLIYAYEV, Yu.I.; LOSEV, N.I.; SHAPIRO, I.M.

Effects of various narcotics on the development of toxic pulmonary edema induced by ammonium chloride. Biul.eksp.biol.med. 42 no.6: 42-45 Je '56. (MLRA 9:9)

1. Iz kafedry patologicheskoy fiziologii (zav. - prof. S.M.Pavlenko) I Moskovskogo ordena Lenina meditsinskogo instituta i Borovskoy bol'nitsy (glavnyy vrach M.I.Pupko) Kaluzhskoy oblasti. Predstavlena deystvitel'nyy chlenom AMN SSSR Ye.M.Tareyevym.

(ANESTHETICS, eff.

on pulm. edema induced by ammonium chloride in white rats)

(LUNGS, dis.

edema, exper., induced by ammonium chloride in white rats, eff. of anesthetics)

(EDEMA, exper.

pulm., induced by ammonium chloride in white rats, eff. of anesthetics)

(AMMONIUM CHLORIDE, eff.

induction of pulm. edema in white rats, eff. of anesthetics)

USSR / Human and Animal Physiology. Internal Secretion, Adrenals. T

Abs Jour : Ref Zhur - Bioll, No 15, 1958, No. 70391

Author : Shapiro, I. M.

Inst : Moscow Society for the Study of Nature

Title : Changes in the Blood Sugar Level in Rabbits Following  
Removal of Both Adrenal Glands and Autotransplantation  
of Them

Orig Pub : Byul. Mosk. o-va ispyt. prirody. Otd. biol., 1957, Vol 62,  
No 2, 106-107

Abstract : Within 24 hours after removal of the adrenals in rabbits,  
the glycemia dropped by about 50 percent. The rabbits  
ordinarily died within the first day after operation.  
Elevation of glycemia after administration of glucose was  
transitory and did not prevent death of the animals. Upon  
autotransplantation of the adrenals, the reduction in  
glycemia was less pronounced; a certain normalization of

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AUTHOR: Shapiro, I. M.

20-114-4-23/63

TITLE: On the Problem of Local and Distant Action of X-Rays Upon the Process of Cell-Division (K voprosu o mestnom i distantsionnom deystvii rentgenovskikh luchey na protsess kletochnogo deleniya)

PERIODICAL: Doklady Akademii nauk SSSR, 1957, Vol. 114, Nr 4, pp. 760-763 (USSR)

ABSTRACT: The tests were made with white mice. In test series I the entire animals were irradiated, in test series II only a local irradiation of the eyes was carried out and the other parts of the body were screened off, in series II the heads of the mice were screened and the trunk extremities were irradiated, in series IV the head and the suprarenal glands were screened and the other parts of the body were irradiated, in series V the head and a portion of the body surface equal to that in the case of screening of the suprarenal glands were screened. In all test series the animals received a dose of 700 r each. Six hours after total irradiation of an animal the amount of dividing cells in the cornea drops to zero. Subsequently, within 1-5 days, a gradual restoration of the mitotic activity took place. But at the end of the time of observation the mitotic activity is 1 1/2

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On the Problem of Local and Distant Action of X-Rays Upon the Process of Cell-Division 20.114-4-23/63

ASSOCIATION: Institut morfologii zhivotnykh im. A. N. Severtsova Akademii nauk SSSR (Institute of Animal Morphology imeni A. N. Severtsov of the AS USSR)

PRESENTED: February 25, 1957, by I. I. Shmal'gauzen, Member, Academy of Sciences, USSR

SUBMITTED: February 22, 1957

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20-3-77/46

AUTHOR: Shapiro, I. M.

TITLE: On the Humoral Mechanism of Distant Influences of Ionizing Radiation Upon the Process of Cell Division (According to Experiments With Parabiosis) (O gumoral'nom mekhanizme distantsionnykh vliyaniy ioniziruyushchey radiatsii na protsess kletochnogo deleniya (po dannym cpytov s parabiozom)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 116, Nr 3, pp. 411 - 414 (USSR)

ABSTRACT: In all probability the decrease of the mitotic activity of the cornea, the head being screened and the rest of the body being irradiated, is dependent on certain factors circulating in the blood. These factors are able to influence the process of cell division. Present report attempts the solution of the problems on "parabiotized" animals. The experiments were carried out on inbred-mice of the species A and C<sub>57</sub> (black). The operation of the parabiosis was carried out 7 to 10 days before the irradiation. For the experiments pairs of same genus, same weight and of the same litter were selected. The skin, the subcutaneous cell tissue and the muscles of the abdominal wall were sewn together. Two series of experiments were established. During both experiments the left "parabiont" has been

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20-3-17/46

On the Humoral Mechanism of Distant Influences of Ionizing Radiation Upon the Process of Cell Division

fore the distance influence of irradiation upon the process of cell division is probably caused chiefly by certain factors circulating in the blood. There are 1 figure, 3 tables, and 20 references, 5 of which are Slavic.

ASSOCIATION: Institute for the Morphology of Animals imeni A. N. Severtsov, AN USSR  
(Institut morfologii zhivotnykh im. A. N. Severtsova Akademii nauk SSSR)

PRESENTED: June 4, 1957, by I. I. Smal'gauzen, Academician

SUBMITTED: May 31, 1957

AVAILABLE: Library of Congress

Card 3/3

SHAPIRO, I.M.

Effect of ionizing radiations on cell division (a study of local and remote effects) [with summary in English]. Biofizika 3 no.4:466-473 (MIRA 11:8) '58

1. Institut morfologii zhivotnykh im. A.N. Severtsova, Moskva.  
(X RAYS--PHYSIOLOGICAL EFFECT)  
(KARYOKINESIS)



GRAYEVSKIY, E.Ya.; SHAPIRO, I.M. (Moskva)

Cell destruction and repair following injury of the organism by  
ionizing radiations. Usp. sovr. biol. 47 no.2:185-203 Mr-Apr '59.

(RADIATIONS, eff.

(MIRA 12:7)

cell destruction & post-irradiation regen., review (Rus))

(REGENERATION,

post-irradiation, review (Rus))

24(0)

AUTHOR:

Shapiro, I. M.

SOV/20-124-3-54/67

TITLE:

On Nuclear Damage in the Resting Cells of the Animal Organism,  
Caused by Ionizing Radiation (O yadernykh povrezhdeniyakh pokoyashchikhsya kletok zhivotnogo organizma, vyzvannykh ioniziruyushchey radiatsiyey)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 3, pp 681-684 (USSR)

ABSTRACT:

By ionizing radiation, the mitotic capacity of the cells is suppressed. The resulting chromosome aberrations reduce tissue regeneration, cause the death of cells as well as genetic changes. The problems of the conservation and of the reparation of the nuclear disturbances at dates after irradiation are of fundamental importance for the clarification of the development mechanisms of the radiation reaction and its consequences. Both the chromosome disturbance and the suppression of mitotic activity are largely reversible processes. However, the reparation rate in chromosome damage has not yet been sufficiently clarified. In the microspores of Tradescantia this regeneration takes approximately 4 minutes (Ref 4). In the sperms of Drosophila, however, the chromosome fractures remain until the moment of fertilization (Refs 5-7). In either case, however, the number of chromosome aberrations after

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On Nuclear Damage in the Resting Cells of the Animal Organism, Caused by Ionizing Radiation

a longer period of time following irradiation will probably remain constant. In the course of the protracted reparation processes, however, the number of aberrations will decrease constantly (Refs 8,9). Thus we have data for the fact that chromosome damage is retained on the one hand and constantly decreases on the other. The author tried to clarify this contradiction by means of the liver of white rats. It is a well-known fact that the normally non-mitotic parenchymatous liver cells (Ref 10) can, by a partial hepatectomy, be induced to intensive mitotic activity. Experiments were carried out in 5 series. In all series (except IV), the whole of the rats' bodies was treated with 500 r X-rays, in series IV, however, with twice 250 r each at an interval of 7 days. In series I - IV, the middle and the left lateral liver lobes of the animals were removed after irradiation. Besides, part of the regenerated dorsal liver lobe was removed, after 30 days, in series V. The results of test series I - III showed that the irradiation-produced nuclear disturbances that lead to a suppression of mitosis are fully repaired during interkinesis. Contrary to this, the chromosome damage in the resting liver cells is permanently conserved. This demonstrates the accumulation of the radiation effect with a frac-

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- On Nuclear Damage in the Resting Cells of the Animal Organism, Caused by Ionizing Radiation

tioned dosis (series IV, 250 + 250 r). In series V, the number of cells with chromosome damage was significantly reduced. The cause of this damage conservation remains obscure. The author tries to explain these causes. Part of the cells perish during mitosis, due to gross structural chromosome disturbances that render cytotomy more difficult. Shapiro and Konstantinova have proved that the epithelial cells of the epidermis perish after 1-3 generations when they have lost part of their chromosome material. T. Yu. Urbakh and N. N. Rott assisted in the work. - There are 2 tables and 11 references, 1 of which is Soviet.

ASSOCIATION: Institut morfologii zhivotnykh im. A. N. Severtsova Akademii nauk SSSR (Institute of Animal Morphology imeni A. N. Severtsov of the Academy of Sciences, USSR)

PRESENTED: October 1, 1958, by I.I. Shmal'gauzen, Academician

SUBMITTED: September 27, 1958

Card 3/3

24(0)

AUTHORS: Shapiro, I. M., Konstantinova, M. M. SOV/20-125-3-54/63

TITLE: On Chromosome Aberrations and the Mitotic Activity Subsequent to the Effect of Ionizing Radiation Under Protection by Carbon Monoxide (On the Problem of Reparation of Radiation Injuries) (O khromosomnykh aberratsiyakh i mitoticheskoy aktivnosti posle vozdeystviya ioniziruyushchey radiatsiyey v usloviyakh zashchity okis'yu ugleroda (K probleme reparatsii lucheвого povrezhdeniya))

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 3, pp 654-657 (USSR)

ABSTRACT: Prophylactic application of several substances increases the percentage of survival of irradiated animals and accelerates the regeneration of the injured tissue. Thus, in the case of hypoxia and anoxia (Refs 1, 2) the number of chromosome aberrations decreases after relatively small doses of radiation. The effect exercised by the two mentioned factors upon the restoration of the capacity of cell division is, however, still insufficiently investigated. This is the reason for the interest in the investigation of the accelerated regeneration of tissue (which is probably connected with the higher percentage of survival) in animals irradiated with a fatal

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On Chromosome Aberrations and the Mitotic Activity      SOV/20-125-3-54/63  
Subsequent to the Effect of Ionizing Radiation Under Protection by  
Carbon Monoxide ( On the Problem of Reparation of Radiation Injuries)

dose under protection. It is the aim of the present paper to investigate the ways of action of a group of substances the mechanism of effect of which is brought into relation with the "oxygen-effect". In this case carbon monoxide was concerned. In the 3 experimental series mice were irradiated with:

I.  $\gamma$ -rays from Co<sup>60</sup> (dose 900 r, intensity of the dose 565 r/min). II. 15 minutes before irradiation the mice were exposed to an atmosphere with 0.5% by volume of CO. Under those conditions the blood of the mice contains 72% carboxy hemoglobin. After 30 days 25% less fatal cases occurred as compared to 100% in control (Ref 3). III. Mice were kept in a similar atmosphere with CO for 17 minutes but not irradiated. After 10 hours all experimental animals were killed and the mitoses in the cornea were counted with respect to the chromosome aberrations. Tables 1 and 2 show the results. They reveal that towards the 8th day after irradiation (which corresponds to the average duration of life of the animals in the I. series) the number of the formed cells amounted in the case of those in hypoxia to three times the number of those

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On Chromosome Aberrations and the Mitotic Activity      SOV/20-125-3-54/63  
Subsequent to the Effect of Ionizing Radiation Under Protection by  
Carbon Monoxide (On the Problem of Reparation of Radiation Injuries)

animals that were not protected. There are good reasons for the assumption that the differences in the intensity of regeneration comprise also the bone marrow, intestines, skin and other organs (Ref 7). Thus, it is possible to explain the increased number of surviving animals protected by CO which is due to the utilization of protective substances causing the state of hypoxia during irradiation. V. Yu. Urbakh assisted in the discussion of the work and the statistical evaluation of the experimental results. There are 2 tables and 7 references, 3 of which are Soviet.

ASSOCIATION: Institut morfologii zhivotnykh im. A. N. Severtsova Akademii nauk SSSR (Institute of Animal Morphology imeni A. N. Severtsov of the Academy of Sciences, USSR)

PRESENTED: December 4, 1958, by I. I. Shmal'gauzen, Academician

SUBMITTED: November 28, 1958

Card 3/3

SHAPIRO, I.M.; ROTT, N.N.; RASS, I.T.

Radiation damage of the nucleus as a factor causing the inhibition  
of cell division. Zhur. ob. biol. 21 no.4:289-296 Jl-Ag '60.  
(MIRA 13:7)

1. Institute of Animal Morphology, U.S.S.R. Academy of Sciences  
and Helminthological Laboratory, U.S.S.R. Academy of Sciences.  
(RADIATION—PHYSIOLOGICAL EFFECT)  
(CELL DIVISION (BIOLOGY))



SHAPIRO, I.M.; LANDER, Ye.Ya.

Role of radiation injury of the nucleus in the mechanism of mitotic inhibition. Zhur. ob. biol. 21 no.5:385-387 S-0 '60. (MIRA 13:9)

1. Institute of Animal Morphology, Academy of Sciences of U.S.S.R.  
(X RAYS—PHYSIOLOGICAL EFFECT) (CELL NUCLEI)  
(KARYOKINESIS)

CHAPLIG, I.M.; LAMDAK, Y .In.

Regulation of cell division during the embryonic development of the pond loach (*Microgobius tessellatus* L.) according to the data of radiation experiments. Dokl. AN S SR 135 no.3:756-759 M '60. (MIRA 13:12)

1. Institut morfologii zhivotnykh in. A.N. Severtsova Akademii nauk  
SSSR. Predstavleno akad. I.I. Smol'gansonen.  
(Embryology--fishes) (Cell division (Biology))  
(X rays--Physiological effect)

SHAPIRO, I.M.

Persistence of chromosomal lesions in X-irradiated resting cells  
of the rat liver. Dokl. AN SSSR 141 no.3:734-736 N '61. (MIRA 14:11)

1. Institut morfologii zhivotnykh im. A.N. Severtsova AN SSSR.  
Predstavleno akademikom I.I. Shmal'gauzenom.  
(X rays--Physiological effect)  
(Chromosomes)

RUDERMAN, Arkadiy Iosifovich; VAYNBERG, Mark Shmerkovich; SHAPIRO,  
I.M., red.; BEL'CHIKOVA, Yu.S., tekhn. red.

[Physical principles of teletherapy using X-rays and gamma  
rays; static and moving irradiation] Fizicheskie osnovy  
distantсионnoi rentgeno- i gammaterapii; staticheskoe i pod-  
vizhnoe obluchenie. Moskva, Medgiz, 1961. 243 p.

(MIRA 15:1)

(X RAYS--THERAPEUTIC USE)  
(GAMMA RAYS--THERAPEUTIC USE)

SHAPIRO, E. M.

(d)

A Biological Method for Revealing Irradiated Parts of the Body and for Evaluation of Radiation Dose

~~L. M. Sharif~~ and I. B. Smirnova

Chromosome abnormalities in the form of anaphase bridges and acentric fragments in the corneal epithelium were induced only by local irradiation of the eye of single or parabiotic mice. The incidence of most abnormalities was the same whether the head only or the whole body was exposed to radiation. Within the range of 100 to 400 r of X-rays, the dose-response curve was linear.

The evidence of chromosome abnormalities in the epidermis of the ear increased linearly with dose after whole-body exposure to 100-900 r of X-rays (200 KV; 15 mA; 0.75 mm Al+0.5 mm Cu) or to 200-600 r of <sup>60</sup>Co γ-rays. At a dose level of 200 r, the RBE was about 0.7 to 0.8.

*Institute of Animal Morphology, Academy of Sciences of the USSR*

report presented at the 2nd Intl. Congress of Radiation Research,  
Harrogate/Yorkshire, Gt. Brit. 5-11 Aug 1962

43190

S/205/62/002/006/015/021  
E027/E410

27 1220

AUTHORS: Smirnova, I.B., Shapiro, I.M.

TITLE: Cytological analysis of changes in the epithelium of the mucosa of the small intestine in mice caused by general X-irradiation

PERIODICAL: Radiobiologiya, v.2, no.6, 1962, 897-902

TEXT: Mice subjected to total body X-irradiation in doses of 200, 400, 700, 1000, 1300, 2000 and 3000 r were killed after 2 and 6 hours and 1, 2 and 3 days and the duodenum was examined histologically. 24 hours after irradiation the number of cells along the midline of the crypts had fallen and, with doses of 700 to 3000 r was only 40% of normal; 3 days later recovery had taken place in the crypts in animals given 400 and 700 r, whereas with 1300 to 4000 r a further fall to 20% of normal had occurred. In the villi the number of cells fell to about 30% of normal 48 hours after doses of 700 and 1000 r, and they showed dystrophic and necrobiotic changes. Death of the cells in the crypts in the early stages after irradiation occurred in interphase and was not associated with chromosome abnormalities. The

Card 1/2

Cytological analysis ...

S/205/62/002/006/015/021  
E027/E410

presence of the latter considerably retarded the processes of recovery, owing to the death of the cells concerned or their descendants. The absence of regeneration of the crypts after doses of 1300 to 3000 r was due to inhibition of mitotic activity. The changes in the villi were due to loss of the covering epithelium and to a reduction in the number of cells passing to the villi from the crypts. There are 5 figures.

ASSOCIATION: Institut morfologii zhivotnykh im. A.N.Severtsova  
AN SSSR, Moskva (Institute of Animal Morphology imeni  
A.N.Severtsov AS USSR, Moscow) K

SUBMITTED: March 26, 1962

Card 2/2

SMIRNOVA, I.B.; SHAPIRO, I.M.

Cytological analysis of changes in the epithelium of the  
mucous membrane of the small intestine of mice induced by  
total X-ray irradiation. Radiobiologiya 2 no.6:897-902 '62.  
(MIRA 16:11)

1. Institut morfologii zhivotnykh imeni A.N.Severtsova AN SSSR,  
Moskva.

\*



NEYFAKH, A.A.; SHAPIRO, I.M.

Radiation study of the function of oocyte nuclei in the ovulation process in loaches. Dokl.AN SSSR 144 no.4:942-944 Je '62.  
(MIRA 15:5)

1. Institut morfologii zhivotnykh im. A.N.Severtsova AN SSSR.  
Predstavleno akademikom Yu.A.Orlovym.  
(X rays--Physiological effect) (Ovulation) (Loaches)

L 10990-63

EWT(1)/EWT(m)/BDS AFFTC/ASD AR/K

S/020/63/149/005/016/018

57  
56

AUTHOR: Barakina, N. F., Shapiro, I. M., and Yanushevskaya, I. M.

TITLE: Intravital biological evaluation of irradiation doses in mammals  
by calculating the percentage of cells with chromosomal aberrations in the bone marrow

19

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 149, no. 5, 1963, 1187-1189

TEXT: The experiments were performed on mice of C 57BL line, both sexes, weighing 18 to 20 g each. The animals were subjected to total X-ray irradiation in doses of 200, 400, 700, and 1,000 r at the rate of 50 r/min. Cells with chromosomal aberrations (bridges and acentric fragments) were counted during the stages of late anaphase and early telophase. The data obtained show that the calculation of bone-marrow cells with chromosomal aberrations can be used as a method of intravital evaluation of the radiation dose in the early post-irradiation period. This method also makes it possible to determine which parts of the body underwent irradiation, by investigating biopsies of the bone marrow from different parts of the hematopoietic system. The most important English-language reference reads as follows: M. A. Bender, P. C. Gooch, Proc. Nat. Acad. Sci. USA, 48, 4, 523 (1962). There are 2 figures and 1 table.

ASSOCIATION: Institut morfologii zhivotnykh im. A. N. Severtsova Akademii nauk SSSR  
(Inst. of Morphology of Animals imeni A.N. Severtson, Academy of Sci. USSR)

Card 1/2/

SHAPIRO, Iosif Solomonovich; ANDREYENKO, Z.D., red.; VLASOVA, N.A.,  
~~red.~~

[Theory of direct nuclear reactions] Teoriia priamykh iadernykh reaktsii. Moskva, Gosatomizdat, 1963. 88 p.

(MIRA 16:9)

(Nuclear reactions)

SHAPIRO, I. N.

DECEASED

1964

c. '62

Surgery  
Urology

SHAPIRO, I. O.; KUTASNIKOV, V. Ya.

Use of "biological gloves" in industrial plants in the Moscow  
and Lenin Districts of Leningrad. Vest. dermat. i ven. no. 6:57-59  
'61. (MIRA 15:4)

1. Iz Leningradskikh kozhno-venerologicheskikh dispanserov  
No. 17 (glavnyy vrach Z. P. Polyakova) i No. 19 (glavnyy vrach  
L. P. Iznairskaya)

(SKIN-DISEASES) (INDUSTRIAL HYGIENE)  
(BIOLOGICAL PRODUCTS)

SHATENSHTEYN, A.I.; SHAPIRO, I.O.; YAKUSHIN, F.S.; ISAYEVA, G.G.; RANNEVA, Yu.I.

Comparison of the acidity of organic compounds in dimethylsulfoxide, ammonia, and cyclohexylamine based on the variation of hydrogen exchange rates. Kin. i kat. 5 no.4:752-753 J1-Ag '64.

(MIRA 17:11)

1. Fiziko-khimicheskiy institut imeni Karpova.

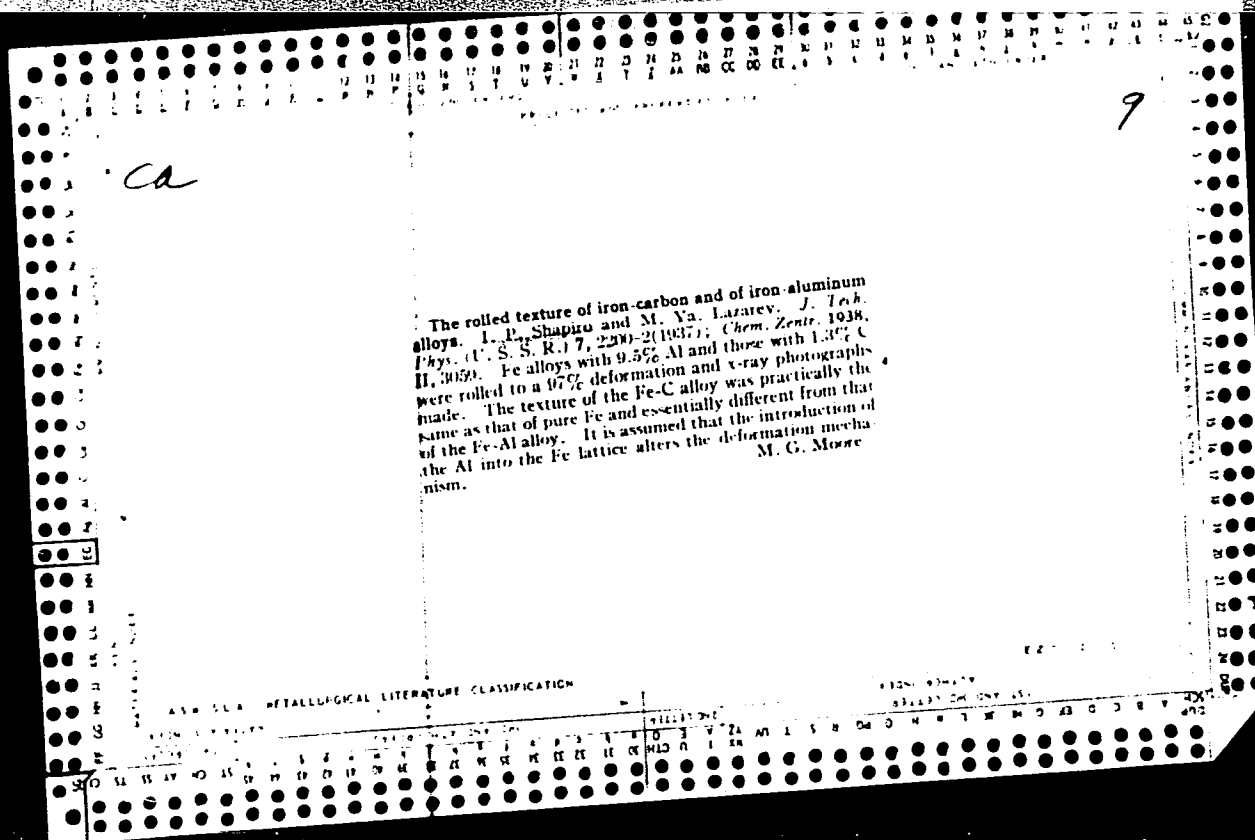
SHAPIRO, I.P.

Vibrator used for thin-walled reinforced concrete structural components.  
Avt.dor. 21 no.9:27 S '58. (MIRA 11:11)  
(Vibrators) (Bridges, Concrete)

BYSTROV, G.M.; SHAPIRO, I.P., red.; SHPAK, Ye.G., tekhn.red.

[Making rubber products for engineering uses with extruding machines] Izgotovlenie rezino-tekhnicheskikh izdelii na cherviachnykh pressakh. Moskva, Gos.nauchno-tekhn.izd-vo khim.lit-ry, 1958. 45 p. (MIRA 12:9)  
(Rubber goods) (Rubber machinery)





1ST AND 2ND LETTERS																										3RD AND 4TH LETTERS																									
1ST LETTER													2ND LETTER													3RD LETTER													4TH LETTER												
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
<p>The relation between rolled texture and edge centered or body centered lattices. G. S. Zolotarev and L. P. Shapiro. <i>J. Tech. Phys.</i> (U. S. S. R.) 7, 2204 (1967). (<i>Phys. Zett.</i> 1968, II, 3315). In the rolling of a Fe two mutually perpendicular axial textures were observed which corresponded to the extension and compression textures, the latter being axially sym. In the case of Fe closely centered and Al edge centered these 2 textures are convertible into one another. The crystal orientations of the rolled texture of Al and those of Fe are superposed when there is a rotation of 90° in the transverse direction. M. G. Misra.</p>																																																			
<p>ASB-31A METALLURGICAL LITERATURE CLASSIFICATION</p>																																																			
<p>147080 74</p>																																																			
<p>147080 74</p>																																																			

2546. Effect of mercury vapour on propagation of  
submarine rectifiers. I. G. NIKRAMOVICH AND I. P.  
SAGAROV. *J. Tech. Phys. USSR*, 20, 1175-9 (Oct.,  
1950) in Russian.

A theoretical and experimental investigation of the effect is presented, the rectifiers being of standard Russian design, with a thin layer of Se mounted between Ni-Fe electrodes and a thin porous layer of a Cd-Bi-Sn alloy. It is shown that the initial penetration of Hg vapour into the outer active layer increases the rectifier asymmetry, but later on, when Hg atoms have had time to diffuse into the Se the density gradient of Hg atoms is reduced between outer and inner layers, and also the overall conductivity is increased, so that the rectifying efficiency is greatly impaired.

A. LANDEMAN

A. LANUJAN

S. A.  
Section 2.

53

537.323

6538. On the question of the thermoelectric power of selenium. L. P. Sidorov. *Zh. Tekh. Fiz.*, 21, 717-19 (No. 6, 1951) *In Russian*.

Crystalline Se, heated from 18°C to 60°C, approximately doubled its thermoelectric power, which also fell to zero after 80 minutes in the presence of Hg vapour at 50°C. The cause of these phenomena is discussed.

V. QUELON

Chair Exptl. Physics, Belorussian State U.

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Thermal treatment of selenium<sup>7</sup>. I. P. Shapiro. *Uchenye Zapiski, Beloruss. Gosnauka: Ser. Fiz.-Mat.*, 1954, No. 19, 116-21. The elec. and photoelec. properties of Se depend on its thermal treatment, being affected not only by temp. and time of heating but also by details of the manner of cooling. This is illustrated by a study of the elec. resistance of carefully prepd. samples of compressed, amorphous Se heated at 180° for 8 hrs., with and without interruptions, and cooled at various temps. and rates of cooling, with the following results: (1) the elec. resistivity (specific resistance) of amorphous Se is  $\rho = 10^{12}$  ohms/cm.; (2) heated for 5 min. at 180°,  $\rho = 10^7$  ohms/cm.; (3) heated for 10 min. at 180°,  $\rho = 427,000$  ohms/cm.; (4) heated at 180° for 15 min.,  $\rho = 235,000$  ohms/cm. The above samples were cooled at room temp.; drastic cooling in liquid air increased the resistivity to 600,000 ohms/cm. as against 235,000 for the sample at room temp. Heating to 180° uninterruptedly for 8 hrs. gave a resistivity of  $\rho = 1.2 \times 10^8$  to  $1.5 \times 10^8$  ohms/cm., whereas the same type of Se heated to 180° with interruptions for cooling every 2 hrs., gave  $\rho = 2 \times 10^4$  -  $3 \times 10^4$  ohms/cm.

The explanation of these results is that the at. radius of crystd. Se is only 1.15 Å., whereas the interat. distances in the lattice are from 2.3 to 4.33 Å. (C.A. 30, 5479<sup>6</sup>); thus there is a smaller "work of disson." (0.23 e.v.) for intermittent cooling as against 0.48 e.v. for uninterrupted heating.

V. H. Gottschalk

SP PM MK

51-4-2-13/28

AUTHOR: Shapiro, I. P.

TITLE: Determination of the Forbidden Band Width From Diffuse Reflection Spectra. (Opredeleniye shiriny zapretnoy zony iz spektrov diffuznogo o'trazheniya.)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol.IV, Nr.2, pp.256-260 (USSR)

ABSTRACT: The present paper reports measurements using the diffuse reflection method of Stepanov, Chekalinskaya and Girin (Refs.4-5) of the forbidden-band width of certain powder semiconductors and insulators. The intensity of diffuse reflection was measured by means of a spectrophotometer whose photoelectric receiver was placed in the path of rays reflected from the studied samples (Fig.2). As a reflection standard MgO powder (which reflects 95-98% of the visible light) was used. To check the method of Stepanov et al. (Ref.4-5) and to verify that the coefficient of absorption calculated from the diffuse reflection spectra gives the true absorption and not just surface properties, the author measured the absorption coefficient for selenium by two independent methods: the method of Stepanov et al. and by absorption in thin

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51-4-2-18/28

Determination of the Forbidden Band Width From Diffuse Reflection Spectra.

films. It was found (Fig.3 and Table 1) that the coefficient of absorption obtained by direct measurement and that calculated from the diffuse reflection spectra coincide satisfactorily. Figs.4-8 give the diffuse reflection curves and the corresponding absorption curves obtained by the author for powders of  $\text{Cu}_2\text{O}$ ,  $\text{CuO}$ ,  $\text{Pb}_2\text{O}$ ,  $\text{CuCl}_2$ ,  $\text{Sb}_2\text{S}_3$ ,  $\text{SnCl}_2$ ,  $\text{ZnO}$ ,  $\text{CdS}$ ,  $\text{ZnS}$ ,  $\text{CdI}_2$ ,  $\text{PbI}_2$  and  $\text{Se}$  (crystalline). From the absorption spectra the forbidden-band widths were determined by extrapolation of the rectilinear portions of the absorption curves to the abscissae (see Fig.1 or Fig.7). The values of the forbidden-band widths obtained in this way are given in the second column of Table 2. The third column in Table 2 gives the forbidden-band widths reported earlier. Satisfactory agreement between the values in columns 2 and 3 of Table 2 was obtained. The diffuse reflection spectra were also obtained for certain solid solutions, in particular for solutions of  $\text{PbI}_2$  in  $\text{CdI}_2$  and for crystalline selenium with  $\text{TlCl}$  impurity. Preliminary

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51-4-2-18/28

Determination of the Forbidden Band Width From Diffuse Reflection Spectra.

results show that the absorption curves of the latter substances differ from the absorption curves of their components. The author thanks Professor B.I. Stepanov and Yu.I. Chekalinskaya for valuable advice. There are 8 figures, 2 tables and 9 references of which 4 are English, 4 Soviet and 1 American.

ASSOCIATION: Byelorussian State University imeni V.I. Lenin.  
(Belorusskiy gos. universitet im. V.I. Lenina.)

SUBMITTED: May 4, 1957.

1. Powders-Absorption spectra-Measurement
2. Selenium-Absorption spectra-Measurement
3. Spectrophotometers-Applications

Card 3/3



SHAPIRO, I.P.

Nature of emission from the laminar phosphor  $\text{CdI}_2 \cdot \text{PbI}_2$ . Uch. zap.

BGU no.41:171-180 '58.

(MIRA 12:3)

(Phosphors) (Luminescence)

9.4300 (1035, 1138, 1143)

84478  
S/112/59/000/014/005/085  
A052/A001

Translation from: Referativnyy zhurnal, Elektrotehnika, 1959, No. 14, p. 10,  
# 28579

AUTHORS: Shapiro, I. P., Zhibankov, R. G.

TITLE: On the Problem of the Effect of Thallium Admixture on Selenium  
Electric Properties

PERIODICAL: Uch.zap. Belorussk. un-t, 1958, No. 41, pp. 189-194

TEXT: The effect of Tl admixture on rectifying properties of Se and the process of Tl diffusion in amorphous and crystalline Se at 17; 83 and 180°C were investigated. Diagrams showing the dependence of current on the diffusion time are given. In the case of amorphous Se an increase of specific conductivity  $\gamma$  is observed at the beginning and after 2-3 hours  $\gamma$  drops. The increase of  $\gamma$  is connected with the crystallization of Se and its subsequent decrease with the diffusion of Tl which reduces  $\gamma$ . The data obtained lead to a conclusion that Tl atoms diffuse intensively in Se, and the rate of diffusion increases with the temperature. When the temperature of a sample increases the rectification coefficient  $n$  changes depending on the thickness of Se layer (from 0.3 to

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84478

S/112/59/000/014/005/085

A052/A001

On the Problem of the Effect of Thallium Admixture on Selenium Electric Properties

0.5 mm), increasing with the thickness of layers. The samples withstand inverse voltages of the order of 7 volts, and the rectifying properties are retained even after their repeated cooling to the temperature of liquid O. The rectification effect is connected with a change in the nature of electric conductivity of Se in a thin layer, which leads to the formation of an p-n-transition. There is 1 reference.

I. P. A.

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

SHAPIRO, I.P.

Effect of Tl and TlCl impurities of the conductivity and photo-conductivity of selenium. Fiz.tver.tela 1 no.12:1782-1785  
D '59. (MIRA 13:5)

1. Kafedra fizicheskoy optiki Belorusskogo gosudarstvennogo universiteta im. V.I.Lenina.  
(Selenium--~~E~~lectric properties)

SOV/170-59-4-16/20

24(6, 7)

AUTHOR:

Shapiro, I.P.

TITLE:

Thermal Luminescence of Cooled and Pulverized Phosphors KCl-TlCl as a Function of Activator Concentration (Termovysvechivaniye okhlazhdennogo i razdroblennogo fosfora KCl-TlCl v zavisimosti ot kontsentratsii aktivatora)

PERIODICAL:

Inzhenerno-fizicheskiy zhurnal, 1959, Nr 4, pp 108-111 (USSR)

ABSTRACT:

The thermal luminescence of alkali-haloid phosphors was thus far investigated mainly on single crystals and alloys. Lushchik [Ref 2] obtained the curves of thermal luminescence for pulverized phosphor with respect to just one certain concentration of an activator. The author investigated the process of thermal luminescence of the KCl-TlCl phosphor subjected to thermal and mechanical treatment at various concentrations of the TlCl activator. The experiments were carried out with irradiation of the investigated phosphors before and after their cooling from +100 to -180°C. The results of experiments are presented in Graphs 1 and 2. The inspection of the luminescence curves shows that the temperature of the maximum intensity remains constant for all concentrations investigated. The cooling leads to some

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SOV/17C-59-4-16/20

Thermal Luminescence of Cooled and Pulverized Phosphors KCl-TlCl as a Function of Activator Concentration

increase in the luminescence intensity, whereas the pulverization of the phosphor reduces it sharply. The duration of the afterglow depends on the concentration of the activator and on the preliminary mechanical and thermal treatment of the phosphors. Academician B.I. Stepanov gave advice in the carrying out of this investigation. There are 2 graphs and 4 references, 3 of which are Soviet and 1 German.

ASSOCIATION: Belorusskiy gosudarstvennyy universitet imeni V.I. Lenina (Belorussian State University imeni V.I. Lenin), Minsk

Card 2/2

609/6-7-1-23/27

Luminescence of Alkali-Halide Compounds with Uranyl Salt Impurities

Spectrum of the phosphor NaCl + U..., where U... represents ammonium uranyl sulphate, is continuous at room temperature (Fig 1a, ... can be interpreted as emission of uranous ions caused out by the crystal lattice vibration. Spectrum of the same phosphor at the 10° K air temperature (Fig 1b), shows bands because at that temperature the lattice vibrations are weaker. Duration of emission by NaCl + U... is found to be  $10^{-4}$  sec. No photoconductivity was found in NaCl + U... in the region 230-900 mμ. Spectra of KCl + U... the various amounts of ammonium uranyl sulphate are shown in Fig. 1v. Fig 2 shows the microphotographs of the same spectra: the one with the strongest maximum was that with  $10^{-3}$  g/g of ammonium uranyl sulphate (at  $10^{-4}$  g/g and lower concentrations no emission was observed). Acknowledgment is made to L.V. Volod'ko for his advice. There are 2 figures and 2 Soviet references.

SUBMITTED: January 15, 1959

Card 2/2

67158

SOV/51-7-6-15/38

24.3400

AUTHOR:

Shapiro, I.P.

TITLE:

Determination of the Absorption Spectra<sup>γ</sup> of Crystal Phosphors from the Diffuse-Reflection Spectra

PERIODICAL:

Optika i spektroskopiya, 1959, Vol 7, No 6, pp 798-802 (USSR)

ABSTRACT:

Girin and Stepanov (Refs 2, 10) employed an idealized Bodo model (Ref 9) to derive expressions (much simpler than Bodo's formulae) which can be used to determine the absorption coefficients from the experimental values of diffuse-reflection coefficients of powdered substances such as phosphors. Antonov-Romanovskiy (Ref 11) assumed that a powdered phosphor layer consists of crystallites and obtained simple relationships which can be used to find the absorption coefficients from the diffuse-reflection spectra. The present paper reports (1) experimental data confirming the correctness of the diffuse-reflection theory developed by Stepanov and Antonov-Romanovskiy and (2) absorption curves deduced from diffuse-reflection spectra for Se, CdI<sub>2</sub>, PbI<sub>2</sub> and six sulphide phosphors. The absorption spectrum of amorphous selenium was obtained by two independent methods: by deduction from the diffuse-reflection spectra using the method of Stepanov and Antonov-Romanovskiy, and by measuring directly the absorption in thin vacuum-deposited films. Fig 1 shows the diffuse-reflection curves  $R_{\infty}(\lambda)$  for amorphous selenium powders with grain

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67158

007/31-7-6-18/78

Determination of the Absorption Spectra of Crystal Phosphors from the Diffuse-Reflection Spectra

dimensions of 90, 175 and 265  $\mu$  (curves 1, 2 and 3 respectively), as well as the absorption curve  $K(\lambda)$  deduced from the  $R_{\infty}(\lambda)$  curves. Values of the absorption coefficient  $K(\lambda)$  of amorphous selenium for wavelengths of 640-887 m $\mu$  are given in Table 1; the second column lists the values of  $K(\lambda)$  calculated from the diffuse-reflection spectra of selenium powders and the third column gives the values measured directly, using vacuum-deposited films. Good agreement between the two sets of values was obtained. The author determined also the long-wavelength edge of the absorption bands of  $CdI_2$ ,  $PbI_2$  and  $CdI_2.PbI_2$ . Again the values of  $K(\lambda)$  were obtained by two independent methods: from the diffuse-reflection spectra of powders and by direct measurement of the absorption in thin sublimated films. To obtain films of required thickness and with required activator concentration a special evaporator (Fig 2) was used. Under a vacuum bell-jar a plane platinum heater was mounted. Porcelain dishes containing  $CdI_2$  and  $PbI_2$  powders could be placed separately or together on the heater. The heated powders were sublimated on cover glasses which were mounted on a rotating disk. In this way  $CdI_2$  and  $PbI_2$  films, as well as  $CdI_2.PbI_2$  phosphor films with a required amount of the activator, could be obtained. Fig 3 shows the 330-800 m $\mu$  absorption curves of pure  $CdI_2$  (curve a) and pure  $PbI_2$  films

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67158

SOV/51-7-6-15/38

Determination of the Absorption Spectra of Crystal Phosphors from the Diffuse-Reflection Spectra

(curve b) obtained with a spectrophotometer. The latter figure shows that the long-wavelength absorption edge of  $\text{CdI}_2$  occurs at  $26\,000\text{ cm}^{-1}$  and that of  $\text{PbI}_2$  lies at  $19\,000\text{ cm}^{-1}$ . The right-hand part of Fig 3 shows the diffuse-reflection spectra of  $\text{CdI}_2$  and  $\text{PbI}_2$  powders (curves 1 and 2 respectively) and the absorption spectra deduced from the latter (curves 1' and 2'). It can be easily seen that measurements of the diffuse reflection lead to the same values of the absorption edge wavelengths of  $\text{CdI}_2$  and  $\text{PbI}_2$ , namely  $26\,000$  and  $19\,000\text{ cm}^{-1}$  respectively. The absorption curves of  $\text{CdI}_2$ - $\text{PbI}_2$  films also agree with the curves deduced from diffuse-reflection spectra. The diffuse-reflection method was also used to find the absorption spectra of six powdered sulphide phosphors: FK-106, FKP-03, L-16, ZJ-2, K-49 and FK-102. Their diffuse-reflection spectra and the corresponding absorption curves are shown in Fig 4. From the absorption spectra the long-wavelength absorption edges were calculated and the energy gaps were deduced. The latter two quantities are listed in Table 2: the absorption edges lay between  $385$  and  $450\text{ m}\mu$  and the energy gaps varied from  $2.66$  (for FK-102)

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67158

SOV/61-7-6-15/11

Determination of the Absorption Spectra of Crystal Phosphors from the Diffuse-Reflection Spectra

to 3.11 eV (for FK-106). The author studied also the diffuse-reflection spectra of  $\text{CdI}_2$  and  $\text{PbI}_2$  powders heated to 100-200°C. Fig 5 shows that heating displaces the long-wavelength edge in  $\text{CdI}_2$  by  $\sim 0.3 \text{ \AA/deg}$ . This is comparable in magnitude with the value of  $\sim 0.7 \text{ \AA/deg}$  reported by Cheesman (Ref 12) for  $\text{CdS}$ . This displacement is due to a decrease of the energy gap caused by expansion of the normal lattice band. Acknowledgment is made to B.I. Stepanov for his advice. There are 5 figures, 2 tables and 12 references, 8 of which are Soviet, 2 German, 1 Hungarian and 1 English. 4

SUBMITTED: March 5, 1959

Card 4/4

SHAPIRO, I.S.; BLOKHINTSEV, L.D.

Capture of  $K^-$ -mesons by the  $O^{16}$  nucleus. Zhur. eksp. i teor.  
fiz. 39 no.4:1112-1114 0 '60. (MIRA 13:11)  
(Mesons)

9.4160 (also 1137, 1395)  
24.3500 1160, 1155, 1035

20856  
S/048/61/025/003/046/047  
B:04/B203

AUTHOR: Shapiro, I. P.  
TITLE: Luminescence of cadmium iodide activated with selenium  
PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25,  
no. 3, 1961, 434-435

TEXT: This paper was read at the 9th Conference on Luminescence (Crystal Phosphors) in Kiev, June 20-25, 1960. Cadmium iodide fluoresces weakly yellowish brown under the action of the near ultraviolet. This luminescence can be explained on the basis of the dissociation mechanism of the formation of points of disturbance and the relationship of luminescence with over-stoichiometric atoms in the lattice of the basic substance. This luminescence is intensely amplified by activation with selenium ( $10^{-6}$  g/g). With reference to papers by A. A. Bundel' and A. I. Rusanova, it is stated that not only metals but also metalloids (e.g., selenium) may be used as activators. Fig. 1 shows spectra of the  $\text{CdI}_2$ -Se luminophore for various Se concentrations (not reproducible).

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20856

S/048/61/025/003/046/047  
B104/B203

Luminescence of cadmium iodide...

These spectra were taken with an MC-3 (MS-3) glass spectrograph. The spectrum of this phosphor was found to consist of two bands: a wide one at 640 mμ, and a narrower and less intense one at 603 mμ. For CdI<sub>2</sub> phosphors activated with Pb or Mn, the band was also established at 640 mμ. Thus, the band with its maximum at 603 mμ seems to belong to selenium, whereas the band with its maximum at 640 mμ is generated by lattice deformations. It is assumed that CdI<sub>2</sub>-Se phosphors constitute a system in which metals and metalloids are simultaneously present as activators. F. D. Klement had shown earlier that in CdI<sub>2</sub>-PbI<sub>2</sub> phosphor the bands of the excitation spectrum agreed with those of the absorption spectrum. The author proved that this also applied to KI-TlCl phosphor. The compounds PbI<sub>2</sub> and CdI<sub>2</sub>-PbI<sub>2</sub> have, as is further shown, p-type conductivity. The forbidden band width in PbI<sub>2</sub> is 2.08 ev. By the method of Stepanov et al. (Ref. 8: B. I. Stepanov, Yu. I. Chekalinskaya and O. P. Girin, Tr. In-ta fiz. i matem. AN BSSR, no. 1 (1952)), the author proved that in CdI<sub>2</sub> the selenium atoms can be regarded as lattice defects. The author thanks B. I. Stepanov for advice and assistance. There are 1 figure and 9 references: 7 Soviet-bloc.

Card 2/2

22181

S/048/61/025/004/030/048  
B117/B212

24,3500  
AUTHORS:

Shapiro, I. P. and Kuznetsov, N. I.

TITLE:

Effect of the ultraviolet radiation on the luminescence characteristics of an electroluminophore

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25, no. 4, 1961, 523-524

TEXT: The present paper was read at the 9th Conference on Luminescence (crystal phosphors). Taking into account that there are numerous processes which may lead to a non-additivity of the photo and electric excitation the authors have investigated the simultaneous effect of ultraviolet radiation and that of the electric field on a ZnS-Cu electroluminophore at a varying excitation. The light green luminescent polycrystalline ZnS-Cu electroluminophore has been used suspended in liquid melamine formaldehyde resin. He has been placed between glass and quartz plates and their surfaces had been coated with a thin transparent SnO<sub>2</sub> layer. This capacitor has been exposed to ultraviolet rays produced by a mercury lamp of the type ПРК-4 (PRK-4), the quartz plate was facing the

Card 1/3

22181

S/048/61/025/004/030/048  
B117/B212

Effect of the ultraviolet...

lamp. The radiation source was feed from a rectifier having a compensating filter. The radiation emitted by the phosphorus has been recorded by an oscillograph with the help of a photomultiplier type ~~63Y~~-19 (FEU-19). Studying the dependence of the luminosity from the voltage applied, showed that there was a positive and also negative non-additivity of the photo and electric excitation. The test results show that the transition from the negative non-additivity to the positive will take place at a higher voltage if the ultraviolet excitation has been increased. It has been found that the sign of the non-additivity is a function of the heating temperature of the phosphorus. Cooling of the phosphorus brings about a negative non-additivity. The luminosity of the electroluminescence is a very important characteristic of the luminophores. Tests have shown that the frequency dependence of the luminosity at 20°C is marked by a positive non-additivity. At -20°C this dependence is mainly marked by a negative non-additivity. An accurate additivity is observed for this case at low frequencies (up to 300 cps). Based on these results it has been concluded that raising the temperature of the phosphorus will bring about a positive, and lowering the temperature will result in a negative non-additivity of the photo and electric excitation. Experimental data have also been found

Card 2/3




22181

Effect of the ultraviolet...

S/048/61/025/004/030/048  
B117/B212

that illustrate the effect of the exposure to ultraviolet on the magnitude and form of the brightness wave. It has been found that an additional exposure to ultraviolet rays will change the luminous character of the luminosity waves if the phosphorus is excited with pulses of varying form. The authors thank M. V. Fok for suggestions. N. Pesenko, Student of the Belorusskiy gos. universitet (Belorussian State University) participated in these investigations. L. A. Vinokurov is mentioned. There are 1 figure and 1 Soviet-bloc reference.



Card 3/3

SHAPIRO, I.P.; KUZNETSOV, N.I.

Effect of ultraviolet radiation on the luminescence characteristics  
of electric luminophors. Izv. AN SSSR. Ser. fiz. 25 no.4:523-  
524 Ap '61. (MIRA 14:4)

(Luminescent substances)

(Ultraviolet rays)

SHAPIRO, I.P.

Characteristics of the luminescence of ZnSCu Mn phosphor  
under the action of variable and constant fields, Vestsi  
Ak BSSR. Ser. fiz. tekhn. nauk, no. 3: 54-57 '61. (MIRA 14:10)  
(Phosphors)  
(Electric fields)

h2913

S/250/62/006/012/002/003  
A001/A101

3500  
AUTHOR: Shapiro, I. P.

TITLE: Luminescence of cadmium halides

PERIODICAL: Akademiya nauk BSSR, v. 6, no. 12, 1962, 766 - 767

TEXT: Cadmium iodide subjected to irradiation by near ultraviolet light is weakly luminescent of yellow-brown shade. Luminescence intensity increases if crystalline cadmium iodide obtained by slow cooling from the molten phase is used. The author explains this luminescence by a dissociation mechanism of origin of defects and a relation of luminescence to overstoichiometric cadmium atoms in the lattice of the basic substance. An admixture of selenium diffusing into the cadmium iodide lattice increases sharply intensity of luminescence. Emission spectrum of  $\text{CdI}_2\text{Se}$  consists of two bands: a broad band with a maximum at  $640 \text{ m}\mu$  and a less intense narrow band with a maximum at  $600 \text{ m}\mu$  due to selenium. Diffusion of a slight quantity of selenium into the cadmium bromide lattice makes the phosphor  $\text{CdBr}_2\text{Se}$  luminescent under the action of ultraviolet rays. Maximum intensity is attained at a selenium concentration of  $10^{-3} \text{ g/g}$  in the

Card 1/2

Luminescence of cadmium halides

S/250/62/006/012/002/003  
A001/A101

$\text{CdBr}_2$  lattice. On the contrary, cadmium chloride with selenium admixture is not luminescent under the action of near ultraviolet. Moreover, admixture of cadmium chloride to phosphors  $\text{CdI}_2\cdot\text{Se}$  and  $\text{CdBr}_2\cdot\text{Se}$  reduces intensity of their luminescence and leads to shifts of emission spectra maxima to longer wavelengths. There is 1 figure.

ASSOCIATION: Belorusskiy gosudarstvennyy universitet im. V. I. Lenina (Belorussian State University imeni V. I. Lenin)

PRESENTED: By A. N. Sevchenko, Academician of AS BSSR

SUBMITTED: June 15, 1962

Card 2/2

SHAPIRO, I.P.

Luminescence of halogen compounds of cadmium. Dokl. AN BSSR 6 no.12:  
766-767 D '62. (MIRA 16:9)

1. Belorusskiy gosudarstvennyy universitet imeni Lenina. Pred-  
stavleno akademikom AN BSSR A.N. Sevchenko.

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L 20224-65 EWT(1)/EPA(s)-2/EWG(k)/EWT(m)/EEC(t)/EWP(t)/EWP(b) Pz-6/Pt-10  
 IJP(c)/SSD/SSD(c)/AFWL/AS(mp)-2/ESD(t) JD/JG/AT S/0250/64/008/010/0638/0640  
 ACCESSION NR: AP5001199

AUTHOR: Shapiro, I. P.; Das'ko, A. D.

TITLE: Concerning the photoconductivity of HgI<sub>2</sub>

SOURCE: AN BSSR. Doklady, v. 8, no. 10, 1964, 638-640

TOPIC TAGS: photoconductivity, mercury compound, semiconductor conductivity, electron transfer

ABSTRACT: The capacitor method is used to investigate the kinetics of photoconductivity of HgI<sub>2</sub> as a function of the front duration and the off-duty cycle of the light pulse. In addition, experiments were carried out on the influence of the electric field and the temperature of the investigated objects on the photoconductivity of the mercury iodide. The purpose of the investigation was to gain a better understanding of the complicated phenomena which are involved in the analysis of photoconductivity of semiconductors. The equipment consisted of a light modulator, a spectrophotometer, a three-stage amplifier, oscilloscopes, a vacuum tube voltmeter, and a power supply. The modulator made it possible to

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ACCESSION NR: AP5001199

2

vary the front duration and the off-duty cycle of the light pulse, and the amplifier had a gain  $7.6 \times 10^4$  and a bandwidth of 4 kcs. The noise level was 2% of the photoeffect for  $\text{HgI}_2$ . The results indicate that the photocurrent in  $\text{HgI}_2$  increases with decreasing front duration up to a certain limit (the photocurrent becomes independent of the front duration below 1 millisecond). The spectral sensitivity of  $\text{HgI}_2$  was found to have a maximum near 540--550 nm, from which it is deduced that the width of the forbidden band is approximately 2 eV. With increasing temperature the photocurrent increases, passes through a maximum, and then decreases. An appreciable hysteresis is observed when the heated sample is cooled. This temperature dependence is attributed to deterioration of the conditions for electron transfer to the conduction band as a result of the preliminary heating. This report was presented by N. M. Sirota. Orig. art. has: 2 figures and 2 formulas.

ASSOCIATION: Belorusskiy gosudarstvennyy universitet imeni V. I. Lenina (Belorussian State University)

SUBMITTED: 200ct63

ENCL: 00

SUB CODE: SS, OP

NR REF SOV: 008

OTHER: 007

Card 2/2

SHAPIRO, I.P.; DAS'KO, A.D.

Photoconductivity of  $\text{HgI}_2$ . Dokl. AN BSSR 8 no.10:638-640 ) '64.  
(MIRA 18:3)

1. Belorusskiy gosudarstvennyy universitet im. V.I.Lenina.

The horizontal component of cosmic radiation at sea level. I. M. Frank and I. S. Shapiro. *Doklady Akad. Nauk S.S.S.R.* 61, 825-8 (1948). Data are presented for the frequency of events in a horizontal counter triggered Wilson chamber shielded with 250 g. sq. cm. of wall material. In 104 hrs. of operation 63 photographs showing tracks were obtained. The intensity of the horizontal components is  $0.015 \pm 0.003$  particle per min. per unit solid angle per sq. cm., i.e.  $2 \pm 0.4\%$  of the intensity of the vertical radiation. The angular distribution was isotropic. The frequency of events was  $2.0 \pm 0.5$  per hr.; this was reduced to  $0.4 \pm 0.1$ ,  $0.00 \pm 0.04$ , and less than 0.1 by the introduction of 1-cm. iron, 0.49-cm. lead, and 1-cm. lead plates, resp., along the diam. of the chamber parallel to the axes of the counters. The horizontal component of cosmic radiation at sea level consists of particles with small penetrating power, apparently electrons with energies of the order of  $10^5$  e.v. Their production involves (a) scattering of electrons and mesons traveling at comparatively large angles with the horizon, (b) formation of  $\delta$ -electrons, and (c) decay of resulting mesons. The no. of electrons resulting from  $c$  is calculated to approx. 0.008 particle per min. per unit solid angle per sq. cm., agreeing in order of magnitude with the exptl. value.

M. I. Sienko

Moscow State U. in. Lomonosov

ASB 324 METALLURGICAL LITERATURE CLASSIFICATION

**APPROVED FOR RELEASE: 08/09/2001**

CIA-RDP86-00513R001548320007-1"

PROCESSING AND PROPERTY INDEX

8

661 Coefficient of Internal Conversion with Pair Emission for any Electric and Magnetic Multipole Radiation. I. S. Shapiro. Zhur. Ekspil. i Teoret. Fiz. 19, 587-604(1948) July (in Russian).

In several experimental works the phenomenon of internal conversion with pair emissions was applied to the study of nuclear levels of naturally radioactive substances (Alikhanov et al, Doklady Akad. Nauk. S.S.S.R. 20, 163(1938); J. phys. radium 4, 163(1938); Zhur. Ekspil. i Teoret. Fiz. 10, 985 (1940)). It is, therefore, important to have a better knowledge of the relationship between the coefficient of pair conversion and the polarity degree of the  $\gamma$  radiation. These coefficients are calculated by the present author, with the Born approximation, for electric and magnetic  $2^1$  fields. It is shown that the Coulomb field does not affect the form of the relationship between the differential probability of the process and the polarity degree of the multipole radiation.

Moscow State U.

ASB-SLA DETALLURGICAL LITERATURE CLASSIFICATION

MATERIALS INDEX										PROCESSING AND PROPERTY INDEX															
OPEN										CLOSED															
SUBJECT										AUTHOR															
TITLE										SUBJECT															
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

SHAPIRO, I. S.

37195. Pretsizionnyy metod izmereniya energiy luchey. (Iz Tekushchey  
Literatury) Uspekhi fiz. Nauk, t. XXXIX, Vyp. 3, 1949, s. 46-68. ---  
Bibliogr: 6 Nazv.

SO: Letopis' Zhurnal'nykh Statey, Vol 7, 1949

1311 Conversion of a  $\gamma$  Quantum on a  $\beta$  Decay Electron.  
 I. S. Shapiro. Doklady Akad. Nauk S. S. R. 87,  
 53-5(1949)(in Russian).

As an alternative to a  $\beta$  decay resulting in an excited state from which a  $\gamma$  quantum is emitted, one may consider the possibility of a transition involving an electromagnetic interaction between the created electron and the excited nucleus, so that the result will be equivalent to an "absorption" of the  $\gamma$  quantum by the electron. The operator of the interaction energy for this transition is  $H' = H_F + H_R$ , where  $H_F$  is the operator of the energy of interaction between the nucleons and the Fermi field (electron-neutrino field), and  $H_R$  characterizes the electromagnetic interaction between the electron and the radiation field of the nucleus. The process belongs to the resonance-fluorescence type, to which the known method for the solution of conversion problems is applied (Dankoff et al, Phys. Rev. 55, 122(1939)). The result shows that the probability of the process studied is very small.

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ASR-51-A METALLURGICAL LITERATURE CLASSIFICATION

PA 159T74

USSR/Nuclear Physics - Internal Conversion Feb 50  
Quantum Mechanics

"Internal Conversion of Gamma-Rays, and the Determination of the Quantum Characteristics of Nuclear Levels," I. S. Shapiro, 43 pp

"Uspekhi Fiz Nauk" Vol XL, No 2

Investigates internal conversion of gamma-rays to establish characteristics (energy, angular momentum, wave function) of levels in radioactive nuclei. Subdivides subject into: internal conversion in atomic electrons, multipolarity of radiation, electromagnetic fields of multipoles, physical nature

159T74

USSR/Nuclear Physics - Internal Conversion Feb 50  
(Contd)

of conversion, theoretical results, pair formation, nature of pair conversion, and basic experimental results.

SHAPIRO, I. S.

159T74

1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
PROCESSES AND PROPERTIES INDEX																																																			
<p>6470 On the Nature of the 0-0 Nuclear Transitions. I. S. Shapiro. <u>Doklady Akad. Nauk S.S.S.R.</u> 72, 1045-8 (1950) June 21.</p> <p>Oppenheimer (<u>Phys. Rev.</u> 80, 164(1941)) and Sakharov (Thesis, <u>Phys. Institute of Akad. of Sciences U.S.S.R.</u>, 1947 (in Russian)) assumed that the perturbation causing 0-0 nuclear transitions is a coulomb interaction between charged nucleons and electrons. The present author attempts a different interpretation by assuming a virtual liberation of a meson followed by the latter's decay. This leads to formulas that, in general, differ from those given by previous writers. A comparison is made with experimental results of Devons et al. (<u>Nature</u> 164, 339(1949)) on the angular distribution of pairs emitted by excited <math>O^{16}</math> nuclei; it is seen that in this case the 0-0 transition must involve a virtual emission and decay of a pseudoscalar meson standing in a pseudoscalar connection with light particles. It follows that wave functions of the excited and the ground states of <math>O^{16}</math> have different parities.</p> <p><i>Moscow State U.</i></p>																																																			
<p>ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																																																			



S.A.

Sect. A

Radioactivity

539.166.2

3837. On a possible mechanism of nuclear  $\gamma$ -radiation with the participation of neutral mesons. I. S. SMARNO. *Zh. Eksp. Teor. Fiz.*, 21, 731-6 (No. 6, 1951) *In Russian*.

Virtual mesons are emitted by the excited nucleus and subsequently decay. The life-time for electric

quadrupole transitions is estimated at  $\sim 10^{-20} \times (\text{meson mass} \times c^2/h\nu)^2 \text{ sec}$ , so that at high energies  $h\nu$  the process is not negligible.

W. J. SWIATECKI

Moscow State U.

1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
PROCESSES AND PROPERTIES INDEX																																																			
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<p>539.165.2</p> <p>2975. On the <math>0 \rightarrow 0</math> transition in <math>O^{16}</math>. I. S. SHAPIRO, <i>Dokl. Akad. Nauk, SSSR</i>, 76 (No. 1) 45-7 (1951) <i>In Russian</i>.</p> <p>I. S. Shapiro (Abstr. 8961 (1950)) regarded this process as the emission of a neutral meson, subsequently decaying into an electron-positron pair. It is pointed out that it can be considered as a non-electromagnetic interaction between the nucleus and the electron-positron field in analogy to the theory of <math>\beta</math>-decay. It is then deduced that the interaction term in the Hamiltonian should be a bilinear form built up from 4-vectors of the type <math>i\gamma^* \gamma_j \gamma_k \gamma_l</math>. W. J. SWATECKI</p>																																																			
<p>ASM - ILLA METALLURGICAL LITERATURE CLASSIFICATION</p> <p>147080 24 187080 412 017 021 821117 012 821117 012 017 121</p>																																																			

Call No.: 6476.47

Author: CHERNY, V. M. and MAZUR, A. I.

Publ Title: SPONTANEOUS FISSION

English Title: Spontaneous fission

Publication Date:

Original Language: None

Publication Place: Moscow (Publishing House of Technical-Theoretical Literature, Moscow)

Date: 1970

No. in Series: 147

No. copies: 4,700

Editorial Staff:

Editor: None

Tech. Ed.: None

Editor-in-Chief: None

Appraiser: None

Text Date:

Summary: The scope of the work is limited to radioactive nuclei and starts off with a relatively low enrichment in which nuclei form from the disintegration of fissionable isotopes. The work treats several problems of atom nuclei spectroscopy and special problems involved in gamma, alpha, and beta spectroscopy. Methods of analysis and instruments are described. The material on methods applied to the analysis of radioactive radiation as well as to radiation of various atomic reactions. Subject index. 38 tables. 233 diagrams. 100 pages.

Notes: The main purpose of the work is to present the main ideas and research results in the field of spontaneous fission; also, to give data on the most important results of recent studies in the field.

Classification:

U.S. Title: Fission; Spontaneous

English Title: Spontaneous fission

USSR/Mathematics - Relativity May 52

"Transformations Laws of Spinors Which Are Solutions of Dirac's Equations," I. S. Shapiro, Moscow State U

"Zhur Ekspert Teoret Fiz" Vol XXII, No 5, pp 524-530

Taking into account the temporary reflections, the author shows that for particles with spin  $1/2$  and rest-mass not zero,  $h$  nonequiv types of spinors satisfying Dirac's eqs exist. Outlines the nonequiv types of Dirac's spinors with rest-mass zero, their number amounting to  $14$ . Analyzes problems

215744

of so-called conjugated spinors and transformational properties of wave-functions of particles with whole spin number. Indebted to Acad L. D. Landau and M. A. Markov. Received 24 Dec 51.

SHAPIRO, I.S.

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